FLOWNEX®
SIMULATION ENVIRONMENT **AEROSPACE**

Flownex® SE determines pressure drop [flow] and heat transfer [temperature] for the connected components of a complete system in steady state and transient, e.g. pumps or compressors, pipes, valves, tanks and heat exchangers.

TYPICAL USES:

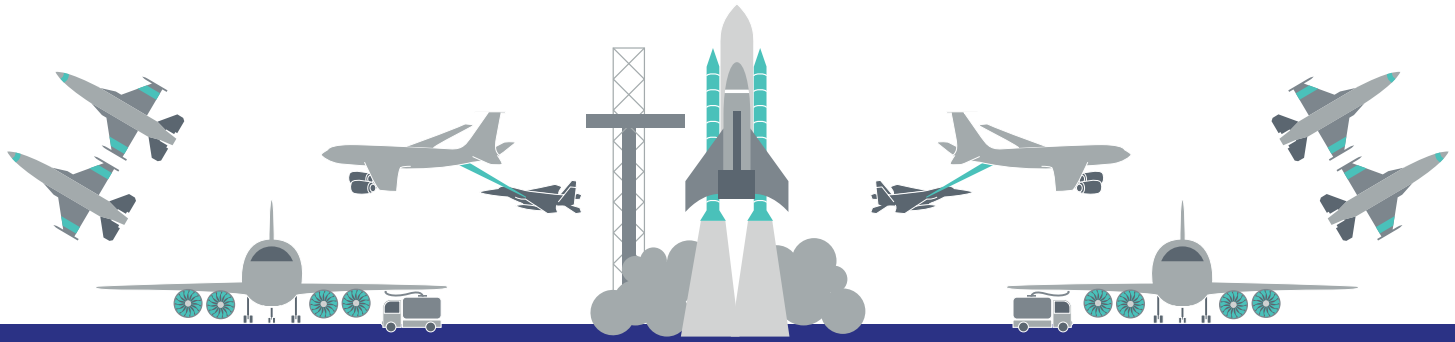
ANALYSIS
- Simulation.
- Performance assessment.
- Modification assessment.
- Fault root cause assessment.

DESIGN
- System sizing.
- Component sizing.
- Determining operating ranges.
- Flow, temperature, pressure, power consumption, etc.
- Testing of control philosophy.

TRAINING
- System behavior examination.
- Performing basic flow and heat transfer calculations.
- Thermohydraulic principles and properties referencing.

BRINGING NUCLEAR QUALITY AND STANDARDS TO SYSTEM SIMULATION

Flownex® is developed in an ISO 9001:2008 quality assurance system and NQA1 supplier approved environment.



"Flownex® enabled engineers to analyze the complete fuel system and its components in an efficient and accurate way, providing them with peace of mind that the final system design is safe, reliable and conforms to customer requirements."

Jaco Gouws
Aerosud

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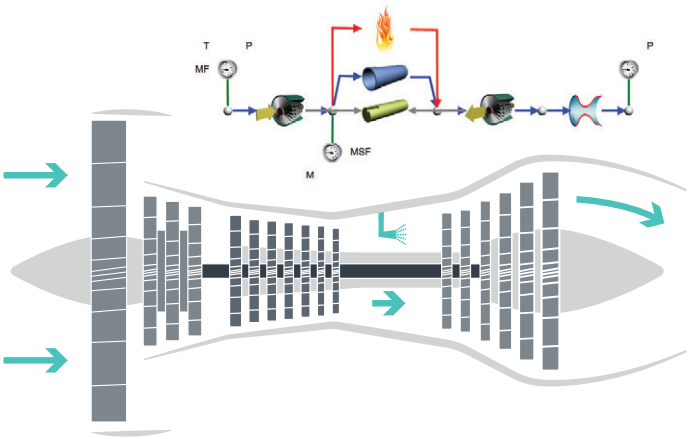
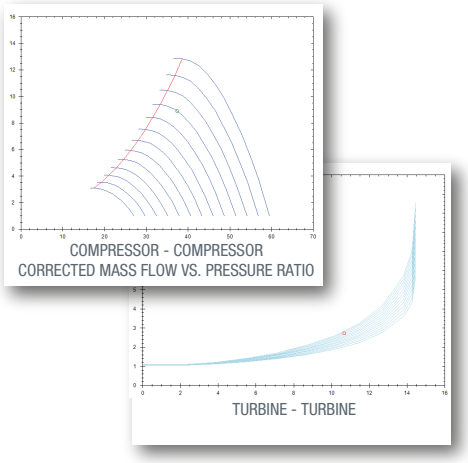
PROPULSION SYSTEMS

- Nozzle thrust calculation.
- Nozzle over/under expansion prediction.
- Supersonic flow simulation capability.

GAS TURBINE ENGINE

- Turbine and compressor sizing.
- Turbine and compressor power matching.
- Compressor surge margin prediction.
- Off-design performance prediction.
- Transient system response.





COMBUSTION CHAMBER:

Integrated combustion chamber design & optimization including coolant flow.

- Combustion product gas composition calculation.
- Combustion process adiabatic flame temperature calculation.
- Flow distribution between cooling slots and main flow path.
- Thermal capacitance in solids for transient modeling.
- Linear and solid conduction heat transfer.
- Axial (2D) conduction.
- Jet impingement cooling.
- Film convection heat transfer.
- Solid-Solid radiation heat transfer.
- Gas-Solid radiation heat transfer.
- Convection heat transfer.

HYDRAULIC SYSTEMS

- Pump selection and pipe sizing.
- Flow distribution.

LIQUID FUELED ROCKETS

- Turbo-pump/combustion dynamics.
- Control philosophy development testing.
- Transient start-up analysis.
- Blowdown calculations.

ENVIRONMENTAL CONTROL & LIFE SUPPORT SYSTEMS

- Cabin temperature, pressure and flow control.
- Air conditioning system flow & temperature distribution.
- Humidity control of air-water vapour mixtures.

FUEL & REFUELING SYSTEMS

- Valve sizing for mid-air refueling.
- Control system design for transient mid-air refueling.
- Pump selection and pipe sizing.
- Heat exchanger area calculation/sizing.